# Teacher design knowledge for technology enhanced learning: A framework for investigating assets and needs

# **Teacher Design Knowledge for Technology Enhanced Learning**: A framework for investigating assets and needs

**Purpose:** To support the work of teachers as designers of technology enhanced learning (TaD of TEL)

**Approach:** Synthesis of research on in classical design fields, instructional design, and teachers' design

**Conclusion**: A framework that can be used: (a) by researchers to study teacher design knowledge and work across projects; and/or (b) by developers and facilitators identifying key areas to encourage/support in teacher professional development programs that involve teacher-designers in specific settings

| Strands | **Normative** | **Artistic** | **Naturalistic** |
|---|---|---|---|
| Description | Features the derivation, testing and critique of models to support the process of design, derived from a systematic, rational, problem-solving mind set | Assumes that the design process is unplanned, flexible and resembles that of an artist, whose appreciation and reflections prompt the selection of techniques and actions | Examines what designers actually do, how they do it and why they do it |
| Inter-disciplinary example | Design thinking (Brown & Wyatt, 2010) | Reflective practitioner (Schön, 1987) | Design cognition (Cross, 2001) |
| General education example | 4C/ID model (van Merriënboer & Kirschner, 2013) | Connoisseurship (Eisner, 1976) | Expert-novice differences (Kirschner et al, 2002) |
| TaD of TEL example | Learning activity types (Harris & Hofer, 2009) | HEART methodology (Donald et al, 2009) | TPACK (Koehler & Mishra, 2005) |
| Aspects of teacher transferable knowledge | **Powerful design *heuristics*** *(inspired by the normative strand)* | **Enrichment and inspiration through *creativity*** *(inspired by the artistic strand)* | **Realistic understanding of design *practices*** *(inspired by the naturalistic strand)* |
| Know-what (teachers' fundamental knowledge base) | What design heuristics have been used by teachers in similar settings with encouraging results? What design heuristics might be worth exploring (by teachers)? | What tacit knowledge do teachers bring with them as well as their TPACK to creatively design TEL? | What practical concerns should be taken into account when teachers design for learning and teaching? |
| Know-why (teachers' productive beliefs) | Why is teachers' careful attention to shaping design processes (both before and during their enactment), critical for successful outcomes? | Why is the rationale behind any design decision, such a crucial part of the design process, and how can teachers become more aware of it? | Why do specific contextual considerations need to be factored into teacher design decisions? |
| Know-how (teachers' repertoire for action) | How do healthy design processes ensue and how similar or different are they from the natural design inclinations of teachers? | How can teachers seek inspiration and ideas from elsewhere, while still relying on their tacit knowledge and TPACK? | How do teacher practical knowledge, common sense, and skill factor into design approaches? |
| Know-when (teachers' judgment of ideas and processes in various contexts) | When should teachers choose, re-assess or change a particular approach to guide the design process? | When are certain elements of a repertoire (including specific TEL approaches) appropriate (e.g. given the setting and goals)? | When should teachers take specific contextual parameters into account? |

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